

Patent Claims

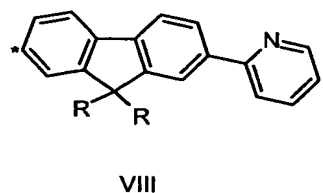
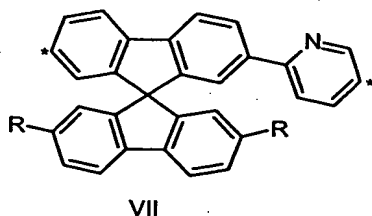
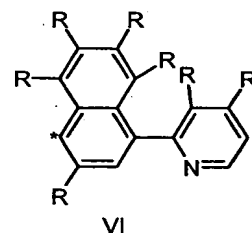
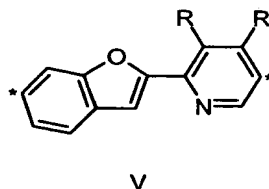
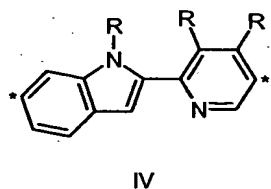
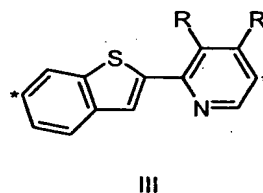
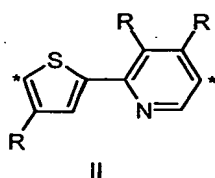
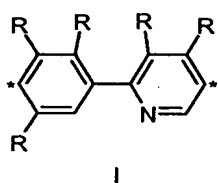
1. Phosphorescent polymer, characterized in that it is conjugated and neutral and contains at least one covalently bonded phosphorescent metal complex.

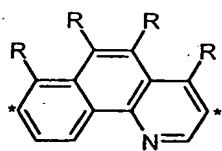
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2. Phosphorescent conjugated polymer according to Claim 1, characterized in that it contains at least one phosphorescent metal complex covalently bonded by at least one ligand L¹ and

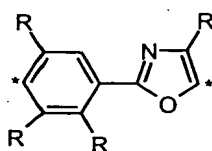
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the ligand L¹ represents units of the formulae I to XXIX

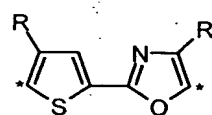




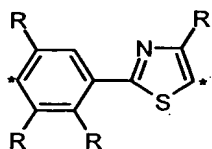
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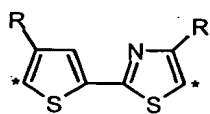
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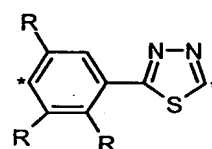
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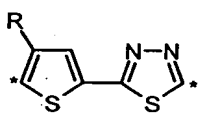
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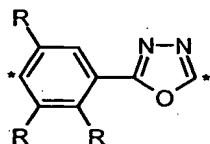
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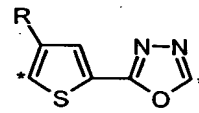
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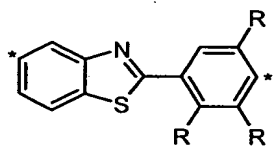
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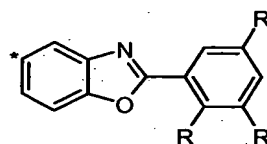
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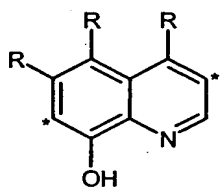
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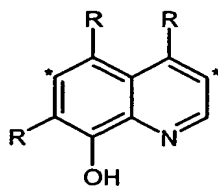
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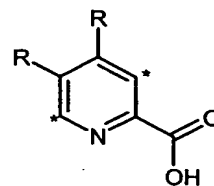
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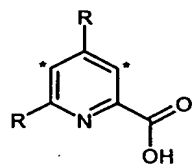
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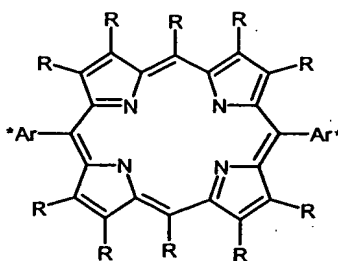
XXI



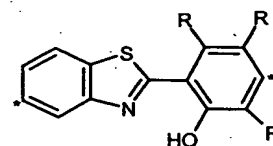
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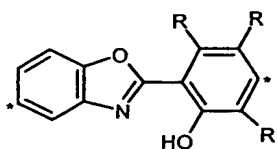
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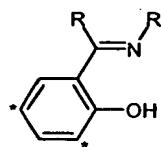
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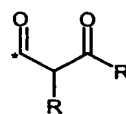
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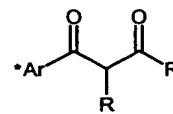
XXVI



XXVIIa



XXVIII

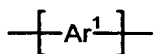


XXIX

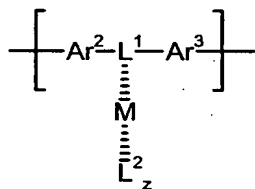
R are identical or different and, independently of one another, represent H, F, CF₃, a linear or branched C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxy group, an optionally C₁-C₃₀-alkyl-substituted C₅-C₂₀-aryl unit and/or an optionally C₁-C₃₀-alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur and

Ar represents optionally substituted phenylene, biphenylene, naphthylene, thienylene and fluorenylene units.

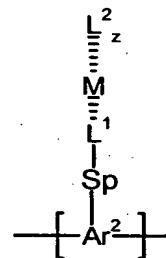
3. Phosphorescent conjugated polymer according to at least one of Claims 1 and 2, characterized in that it contains repeating units of the general formulae A and B-Ia or A and B-II or has a structure of the general formulae C or D



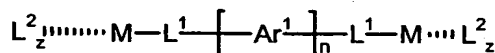
A



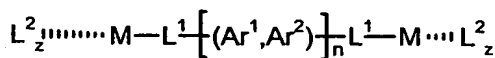
B-Ia



B-II



C



D

in which

Ar¹, Ar² and Ar³ are identical or different and, independently of one another, represent optionally C₁-C₃₀-alkyl-substituted C₅-C₂₀-aryl units and/or optionally C₁-C₃₀-

alkyl-substituted heteroaryl units having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur,

L^1 and L^2 are identical or different and

5

L^1 has one of the meanings stated in Claim 2, in the case of structures B-II, C and D one of the two linkage positions being saturated by H, F, CF_3 , a linear or branched C_1 - C_{22} -alkyl group, a linear or branched C_1 - C_{22} -alkoxy group, an optionally C_1 - C_{30} -alkyl-substituted C_5 - C_{20} -aryl unit and/or an optionally C_1 - C_{30} -alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur and

10

L^2 independently of L^1 , has one of the meanings stated for L^1 in Claim 2, the two linkage positions, independently of one another, being saturated by H, F, CF_3 , a linear or branched C_1 - C_{22} -alkyl group, a linear or branched C_1 - C_{22} -alkoxy group, an optionally C_1 - C_{30} -alkyl-substituted C_5 - C_{20} -aryl unit and/or an optionally C_1 - C_{30} -alkyl-substituted heteroaryl units having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur,

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the ligands L^1 and L^2 complex the metal M in a chelate-like manner,

M represents iridium(III), platinum(II), osmium(II) or gallium(III),

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n represents an integer from 3 to 10 000,

z represents an integer from 0 to 3 and

Sp is a spacer, in particular a linear or branched C_2 - C_{15} -alkylene unit or a C_2 - C_{15} -heteroalkylene unit having 1 to 3 chain hetero atoms from the group consisting of nitrogen, oxygen and sulphur, a C_5 - C_{20} -arylene unit and/or a heteroarylene unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur or a C_1 - C_{12} -alkylenecarboxylic acid or C_1 - C_{12} -alkylenedicarboxylic acid or a C_1 - C_{12} -alkylenecarboxamide or a C_1 - C_{12} -alkylenedicarboxamide unit.

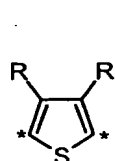
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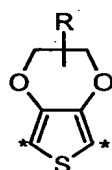
4. Phosphorescent conjugated polymer in at least one of Claims 1 to 3, characterized in that it contains repeating units of the general formulae A and B-Ia or A and B-II or has a structure of the general formulae C or D

5 in which

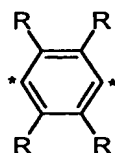
10 Ar^1 , Ar^2 and Ar^3 are identical or different and, independently of one another, represent thiophene units of the formula XXX and XXXI, benzene, biphenyl and fluorene units of the formulae XXXII to XXXIV and/or heterocycles of the formulae XXXV to XXXXIV



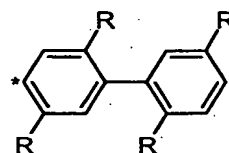
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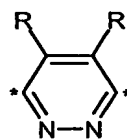
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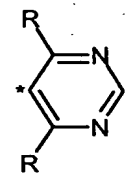
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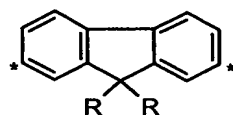
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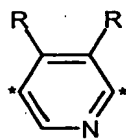
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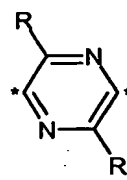
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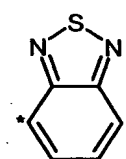
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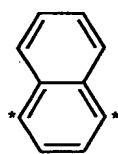
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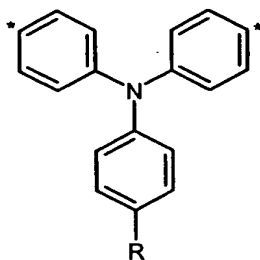
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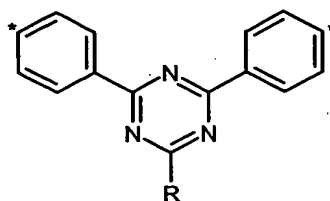
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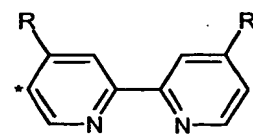
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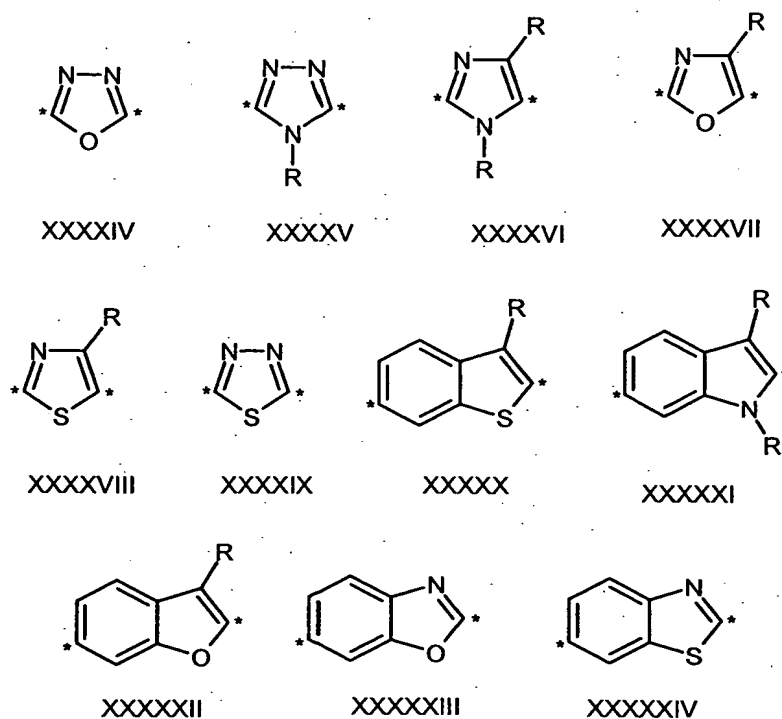
XXXXI



XXXXII



XXXXIII



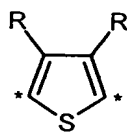
5 in which

R are identical or different and, independently of one another, represent H, F, CF₃, a linear or branched C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxy group, an optionally C₁-C₃₀-alkyl-substituted C₅-C₂₂-aryl unit and/or an optionally C₁-C₃₀-alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur.

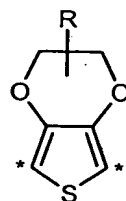
5. Phosphorescent conjugated polymer in at least one of Claims 1 to 4, characterized in that it contains repeating units of the general formulae A and B-Ia or A and B-II or a structure of the general formulae C or D

in which

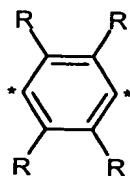
Ar¹, Ar² and Ar³ are identical or different and, independently of one another, represent thiophene units of the formulae XXX and XXXI and benzene, biphenyl and fluorene units of the formulae XXXII to XXXIV



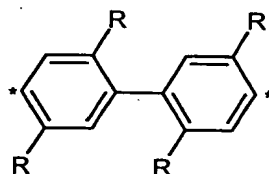
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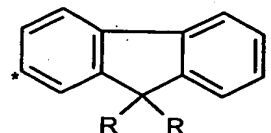
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XXXII



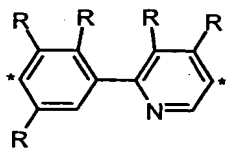
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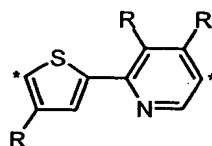
XXXIV

L^1 and L^2 are units selected from the formulae I, II, III, VIII, XVIII, XX, XXI, XXIV, XXVII, XXVIII and XXIX and

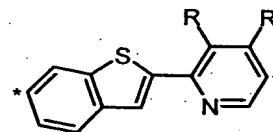
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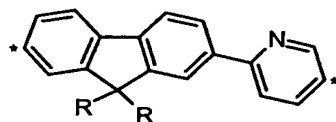
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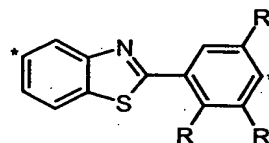
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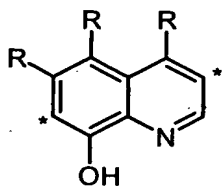
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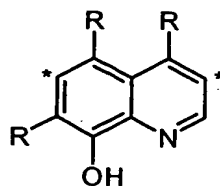
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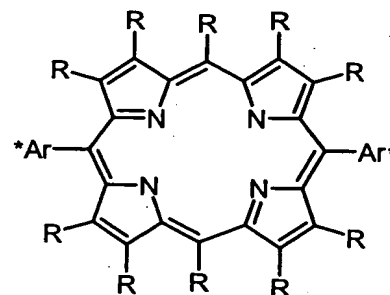
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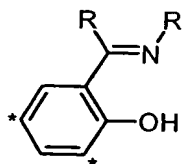


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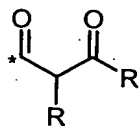


XXI

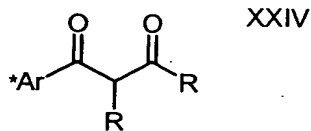




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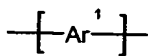
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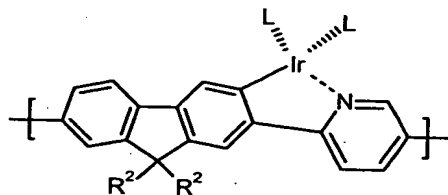
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XXIV

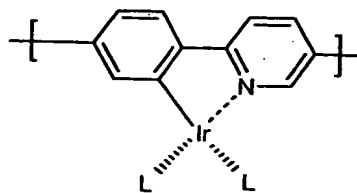
- R has the meaning stated in at least one of Claims 2 to 4,
- 5 M represents osmium(II), iridium(III) and platinum(II),
- n represents an integer from 5 to 500,
- z represents an integer from 1 to 3 and
- 10 Sp represents a C₁-C₆-alkyleneoxy- or a C₁-C₆-alkylenecarboxylic acid or a C₁-C₆-alkylenedicarboxylic acid.
6. Phosphorescent conjugated polymer according to at least one of Claims 1 to 5,
- 15 characterized in that it contains repeating units selected from the following general formulae A and B-I-1 to B-I-5 or A and B-II-1 and B-II-4 or has a structure of the general formulae C-1 and C-2



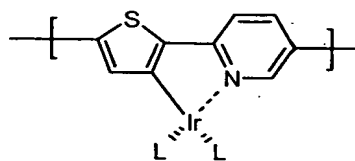
A



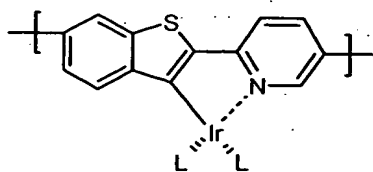
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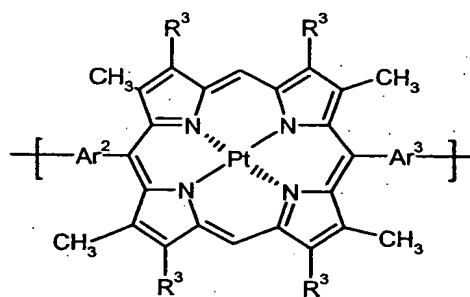
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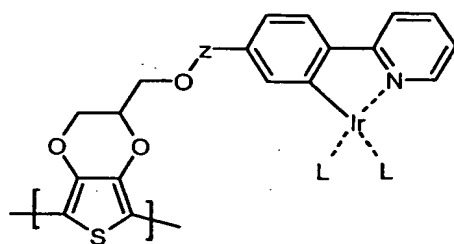
B-I-3



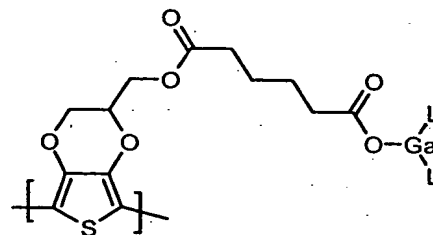
B-I-4



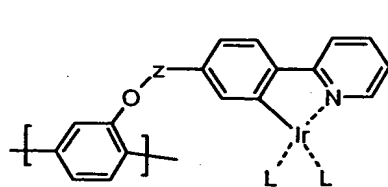
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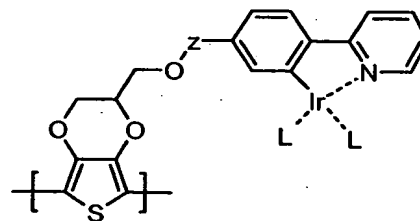
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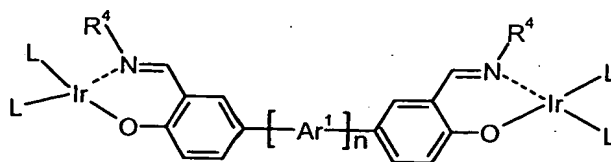
B-II-2



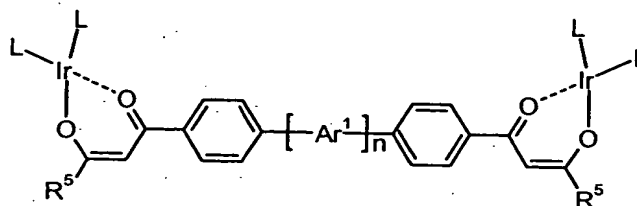
B-II-3



B-II-4



C-1

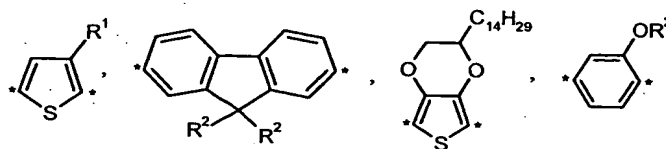


C-2

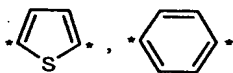
in which

5

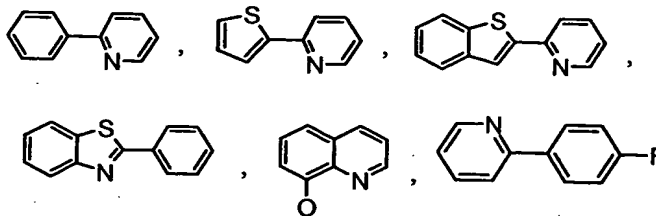
Ar¹ represents



Ar² represents



L represents



10

R¹ represents dodecyl,

R² represents n-octyl and 2-ethylhexyl,

15

R³ represents methyl and ethyl,

R⁴ represents methyl and n-hexyl,

R^5 represents methyl and phenyl,

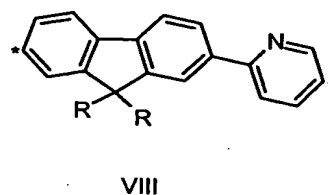
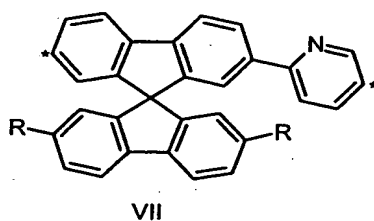
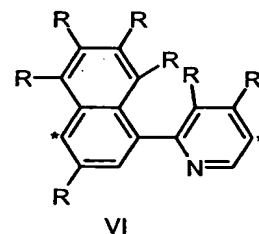
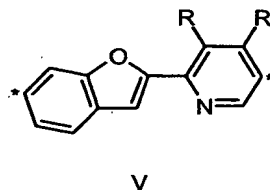
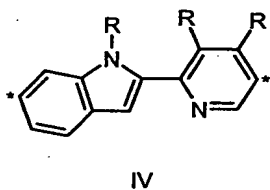
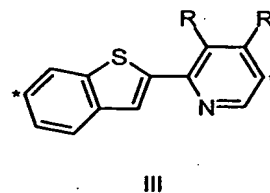
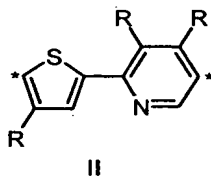
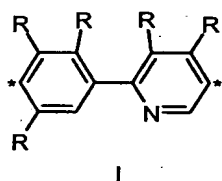
Z represents a CH_2 or $C=O$ group and

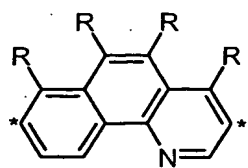
5 n has at least one of the meanings stated in Claims 3 to 5.

7. Phosphorescent conjugated polymer according to Claim 1, characterized in that it contains at least one phosphorescent metal complex covalently bonded via at least one ligand L^1 and

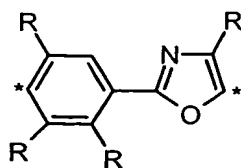
10

the ligand L^1 represents units of the formulae I to XXIXc

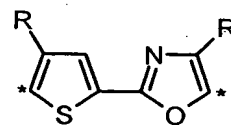




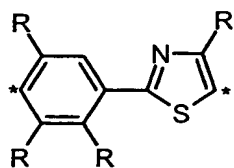
IX



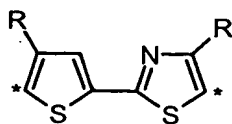
X



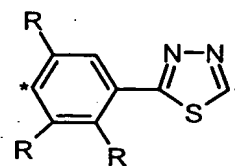
XI



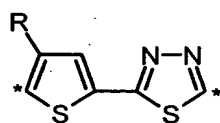
XII



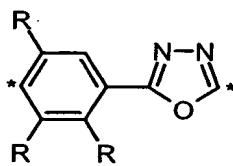
XIII



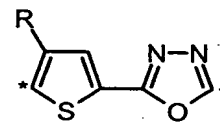
XIV



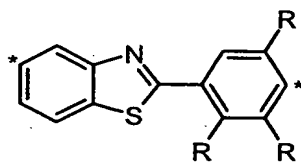
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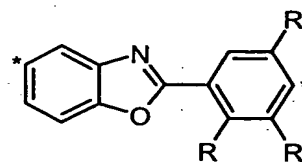
XVI



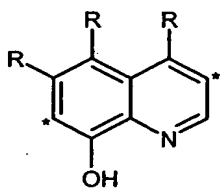
XVII



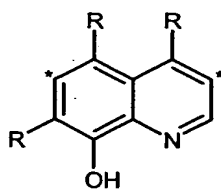
XVIII



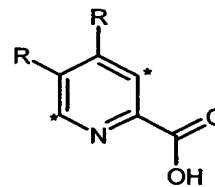
XIX



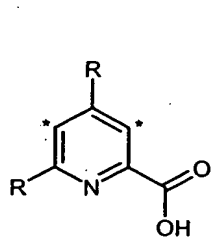
XX



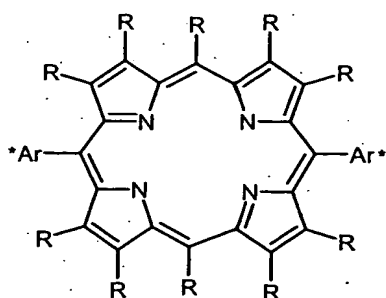
XXI



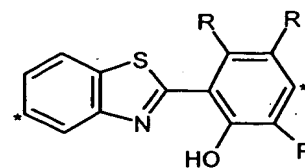
XXII



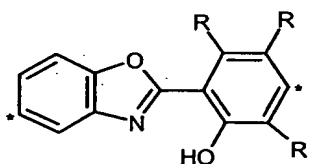
XXIII



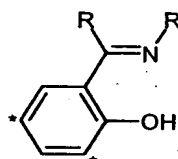
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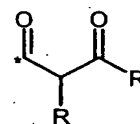
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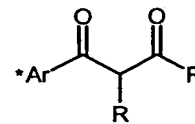
XXVI



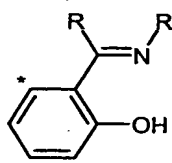
XXVIIa



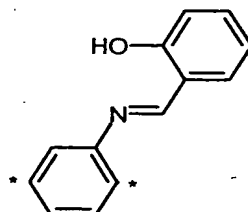
XXVIII



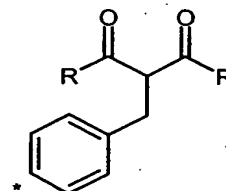
XXIX



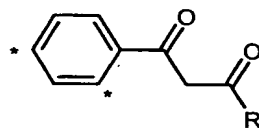
XXVIIb



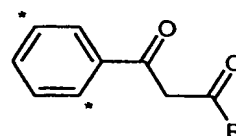
XXVIIc



XXIXa



XXIXb

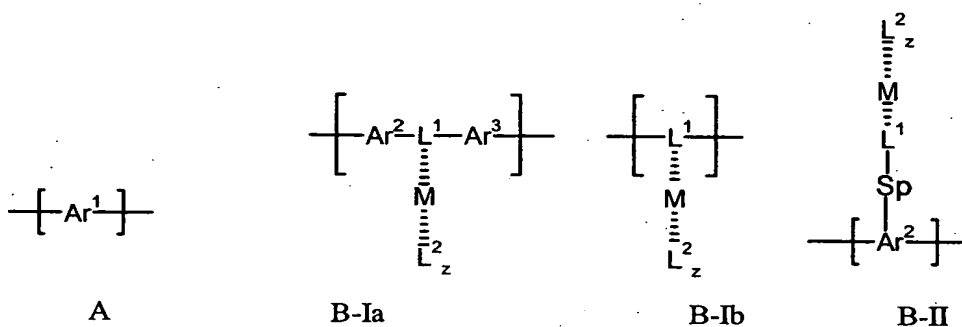


XXIXc

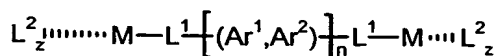
R are identical or different and, independently of one another, represent H, F, CF₃, a linear or branched C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxy group, an optionally C₁-C₃₀-alkyl-substituted C₅-C₂₀-aryl unit and/or an optionally C₁-C₃₀-alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur and/or represent a linear or branched partly fluorinated or perfluorinated C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxycarbonyl group, a cyano group, a nitro group, an amino group, an alkylamino, dialkylamino, arylamino, diarylamino or alkylarylamino group or represent an alkyl- or arylcarbonyl group, alkyl denoting C₁-C₃₀-alkyl and aryl denoting C₅-C₂₀-aryl, and

Ar represents optionally substituted phenylene, biphenylene, naphthylene, thienylene and/or fluorenylene units.

- 5 8. Phosphorescent conjugated polymer according to at least one of Claims 1 and 7, characterized in that it contains repeating units of the general formulae A and B-Ia, A and B-Ib or A and B-II or has a structure of the general formulae C or D



C



D

in which

Ar¹, Ar² and Ar³ are identical or different and, independently of one another, represent optionally C₁-C₃₀-alkyl-substituted C₅-C₂₀-aryl units and/or optionally C₁-C₃₀-alkyl-substituted heteroaryl units having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur,

L¹ and L² are identical or different and

L¹ has one of the abovementioned meanings, in the case of structures B-II, C and D one of the two linkage positions being saturated by H, F, CF₃, a linear or branched C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxy group, an optionally C₁-C₃₀-alkyl-substituted C₅-C₂₀-aryl unit and/or an optionally C₁-C₃₀-alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur and/or

by a linear or branched, partly fluorinated or perfluorinated C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxycarbonyl group, a cyano group, a nitro group, an amino group, an alkylamino, dialkylamino, arylamino, diarylamino or alkylaryl amino group or by an alkyl- or arylcarbonyl group, alkyl denoting C₁-C₃₀-alkyl and aryl denoting C₅-C₂₀-aryl, and

L², independently of L¹, has one of the meanings mentioned above for L¹, the two linkage positions independently of one another being saturated by H, F, CF₃, a linear or branched C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxy group, an optionally C₁-C₃₀-alkyl-substituted C₅-C₂₀-aryl unit and/or an optionally C₁-C₃₀-alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur and/or by a linear or branched, partly fluorinated or perfluorinated C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxycarbonyl group, a cyano group, a nitro group, an amino group, an alkylamino, dialkylamino, arylamino, diarylamino or alkylaryl amino group or by an alkyl- or arylcarbonyl group, alkyl denoting C₁-C₃₀-alkyl and aryl denoting C₅-C₂₀-aryl, and linkage positions being understood as meaning the positions marked with * in the formulae I to XXIX,

the ligands L¹ and L² complex the metal M in a chelate-like manner,

M represents iridium(III), platinum(II), osmium(II), gallium(III) or rhodium(III),

n represents an integer from 3 to 10 000,

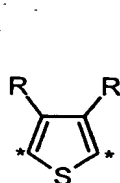
z represents an integer from 0 to 3 and

Sp is a spacer, in particular a linear or branched C₂-C₁₅-alkylene unit or a C₂-C₁₅-heteroalkylene unit having 1 to 3 chain hetero atoms from the group consisting of nitrogen, oxygen and sulphur, a C₅-C₂₀-arylene unit and/or a heteroarylene unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur, or a C₁-C₁₂-alkylenecarboxylic acid unit or C₁-C₁₂-alkylenedicarboxylic acid unit or a C₁-C₁₂-alkylenecarboxamide unit or a C₁-C₁₂-alkylenedicarboxamide unit.

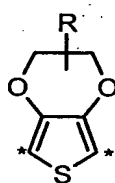
9. Phosphorescent conjugated polymer according to at least one of Claims 1, 7 or 8, characterized in that it contains repeating units of the general formulae A and B-Ia, A and B-Ib or A and B-II or has a structure of the general formulae C or D,

5. in which

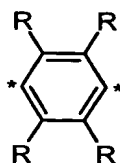
Ar¹, Ar² and Ar³ are identical or different and, independently of one another, represent thiophene units of the formulae XXX and XXXI, benzene, biphenyl and fluorene units of the formulae XXXII to XXXIV and/or heterocycles of the formulae XXXV to XXXXXIV and/or units of the formulae XXXXXV to XXXXXVIII,



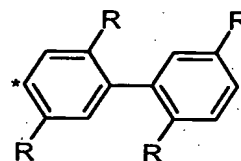
XXX



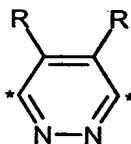
XXXI



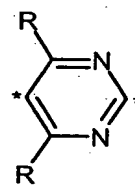
XXXII



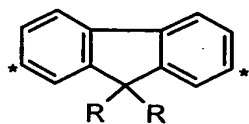
XXXIII



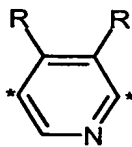
XXXVI



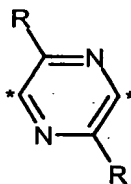
XXXVII



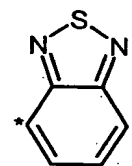
XXXIV



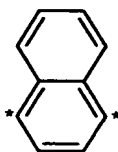
XXXV



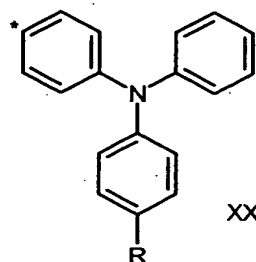
XXXVIII



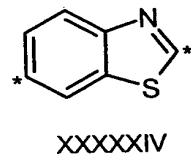
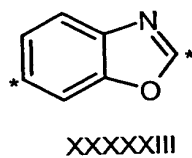
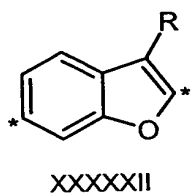
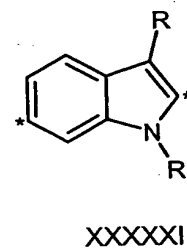
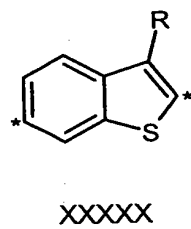
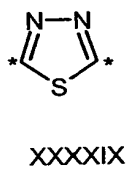
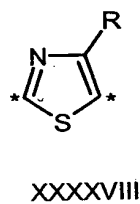
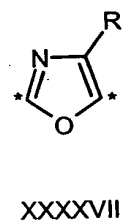
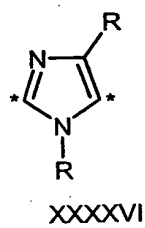
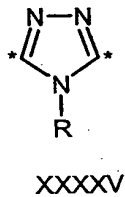
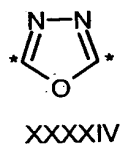
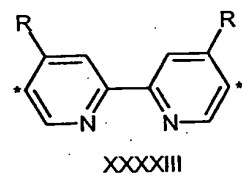
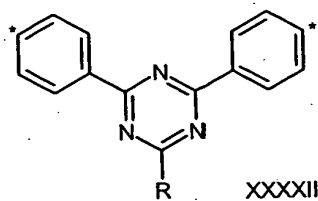
XXXIX

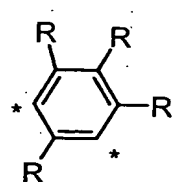


XXXX

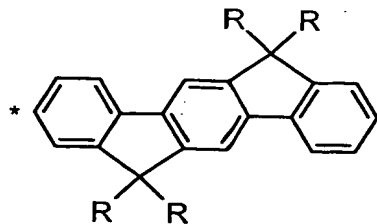


XXXXI

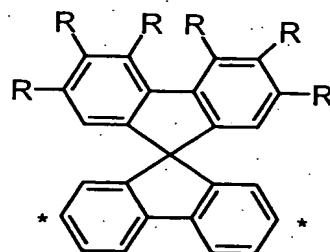




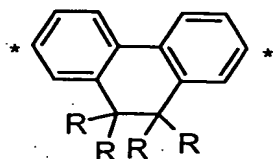
XXXXXV



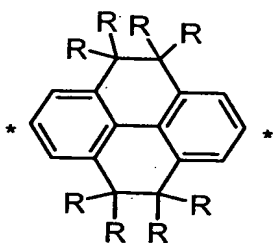
XXXXXVI



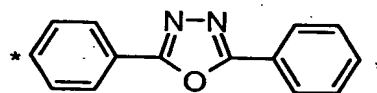
XXXXXVII



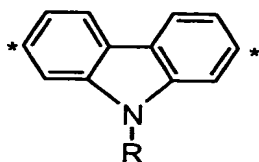
XXXXXVIII



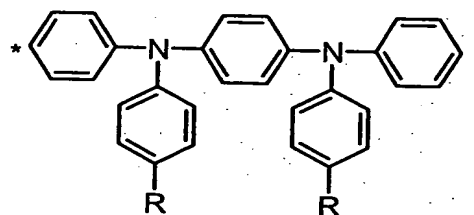
XXXXXIX



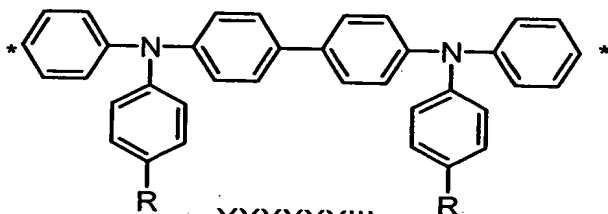
XXXXXX



XXXXXXI



XXXXXXII

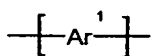


XXXXXXIII

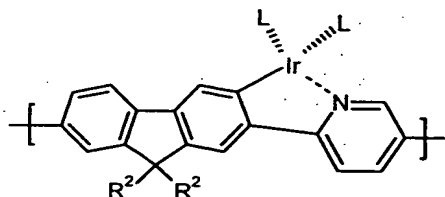
in which

- 5 R are identical or different and, independently of one another, represent H, F, CF₃, a linear or branched C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxy group, an optionally C₁-C₃₀-alkyl-substituted C₅-C₂₀-aryl unit and/or an optionally C₁-C₃₀-alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur and/or represent a linear or
- 10 branched, partly fluorinated or perfluorinated C₁-C₂₂-alkyl group, a linear or branched C₁-C₂₂-alkoxycarbonyl group, a cyano group, a nitro group, an amino group, an alkylamino, dialkylamino, arylamino, diarylamino or alkylarylamino group or represent an alkyl- or arylcarbonyl group, alkyl denoting C₁-C₃₀-alkyl and aryl denoting C₅-C₂₀-aryl.

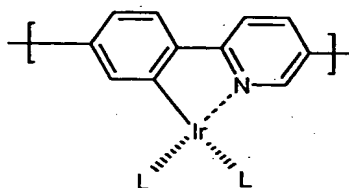
10. Phosphorescent conjugated polymer according to at least one of Claims 1 or 7 to 9, characterized in that it contains repeating units selected from the following general formulae A and B-I-1 to B-I-6 or A and B-II-1 to B-II-4 or has a structure of the general formulae C-1, C-2 or C-3 or D-1, D-2 or D3



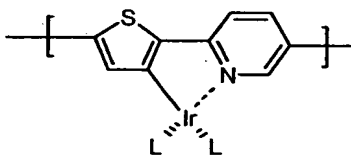
A



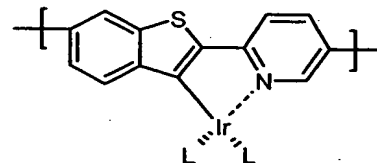
B-I-1



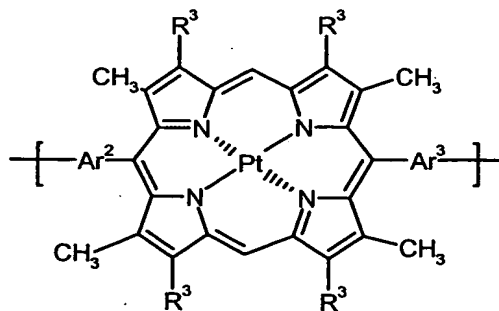
B-I-2



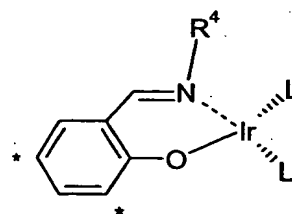
B-I-3



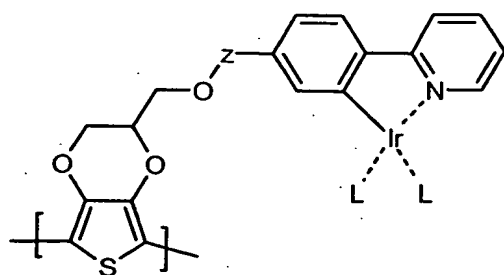
B-I-4



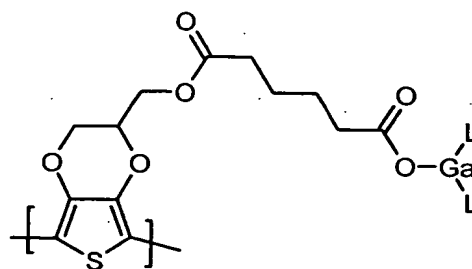
B-I-5



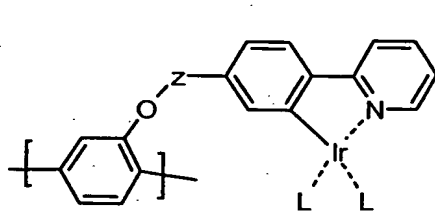
B-I-6



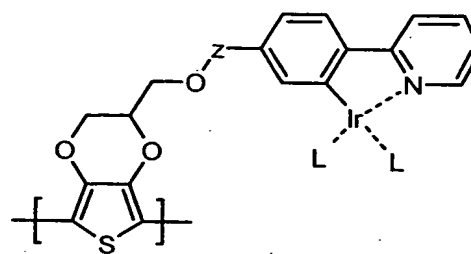
B-II-1



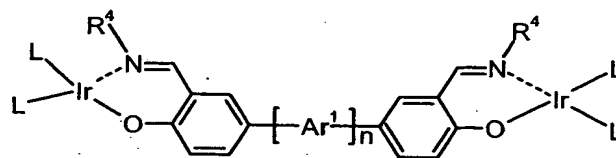
B-II-2



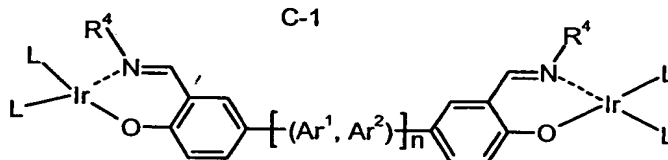
B-II-3



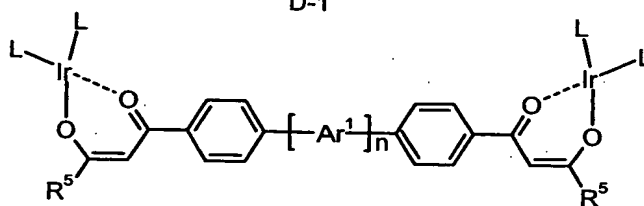
B-II-4



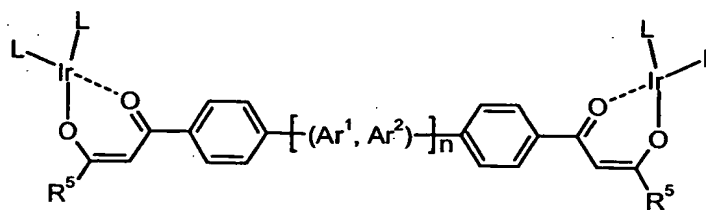
C-1



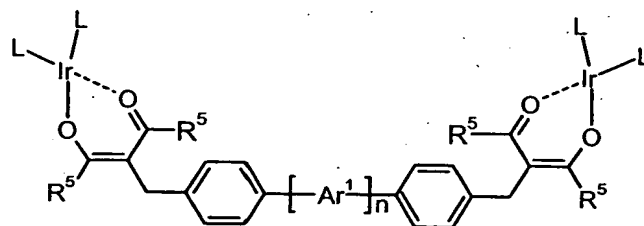
D-1



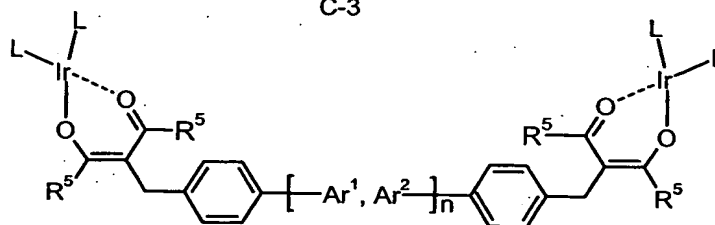
C-2



D-2



C-3

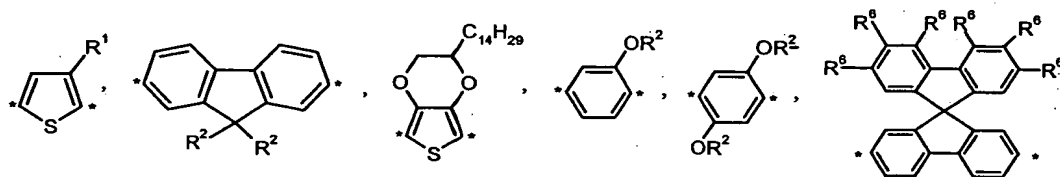


D-3

in which

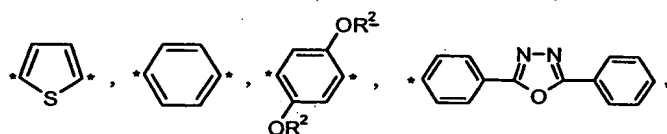
5

Ar^1 represents

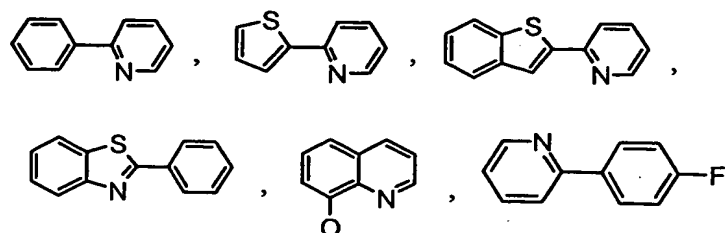


Ar^2 represents

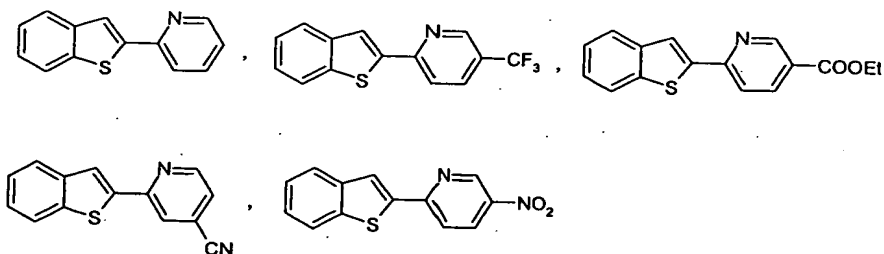
10



L represents



15



R¹ represents dodecyl,

5 R² represents n-octyl and 2-ethylhexyl,

R³ represents methyl and ethyl,

10 R⁴ represents methyl and n-hexyl,

R⁵ represents methyl and phenyl,

15 R⁶ represents H, a linear or branched C₁-C₂₂-alkyl group or a linear or branched C₁-C₂₂-alkoxy group,

Z represents a CH₂ or C=O group and

n has the meaning stated in Claim 8.

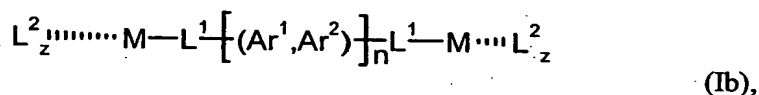
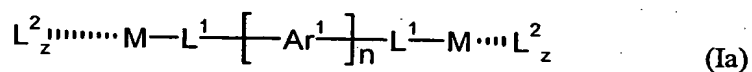
20 11. Luminescent polymer, characterized in that it has a conjugated main chain and contains at least one covalently bonded metal complex, the luminescence being a combination of the fluorescence of the conjugated main chain and of the phosphorescence of the covalently bonded metal complex or complexes.

25 12. Luminescent polymer according to Claim 11, characterized in that it emits white light.

13. Luminescent polymer according to Claim 11 or 12, characterized in that it emits light which is defined by a colour location of $x = 0.33 \pm 0.13$ and $y = 0.33 \pm 0.13$ in the chromaticity diagram according to CIE 1931.

14. Luminescent polymer according to at least one of Claims 11 to 13, characterized in that the metal complex or complexes, which may be identical or different, is or are covalently bonded to the chain ends of the conjugated main chain.

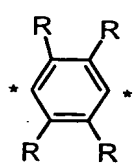
- 5 15. Luminescent polymer according to Claim 14, characterized in that it has a structure of the general formula (Ia) or (Ib)



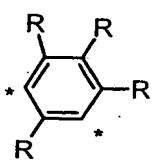
10

in which

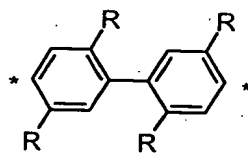
- 15 Ar^1 represents optionally substituted phenylene units (IIa) or (IIb), biphenylene units (IIc), fluorenylene units (IId), dihydroindenofluorenylene units (IIe), spirobifluorenylene (IIf), dihydrophenanthrylene units (IIg) or tetrahydropyrenylene units (IIh)



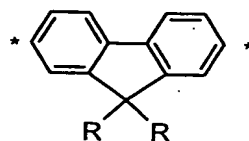
(IIa)



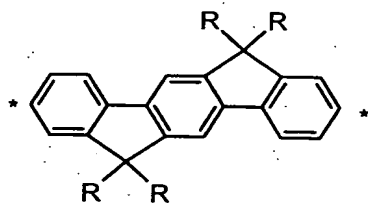
(IIb)



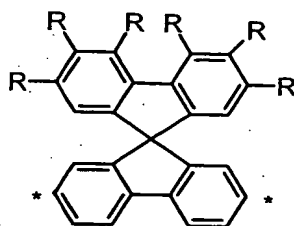
(IIc)



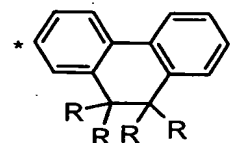
(IIId)



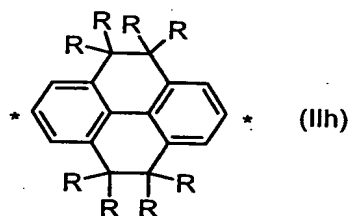
(IIe)



(IIIf)

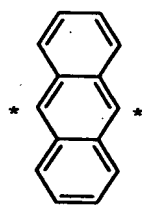


(IIIg)

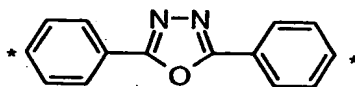


(IIh)

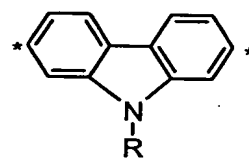
Ar^2 differs from Ar^1 and represents units selected from (IIa) to (IIq)



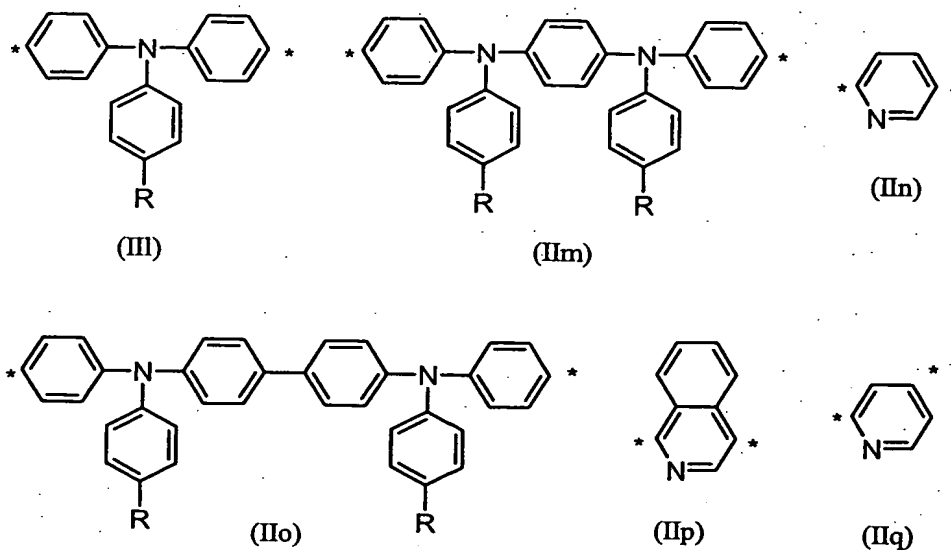
(IIi)



(IIj)

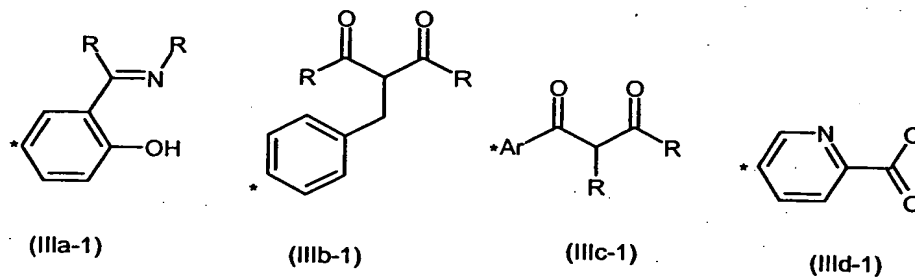


(IIk)



L^1 and L^2 in each case are identical or different and

5 L^1 is a ligand of the formulae (IIIa-1) to (IIId-1)

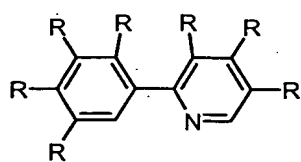


in which

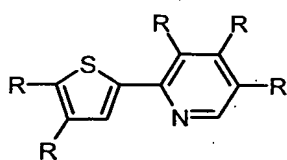
10

Ar represents optionally substituted phenylene, biphenylene, naphthylene, thienylene or fluorenylene units,

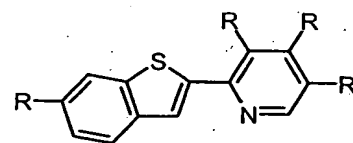
15 L^2 independently of L^1 , is a ligand selected from units of the formulae (IVa-1) to (IVy-1)



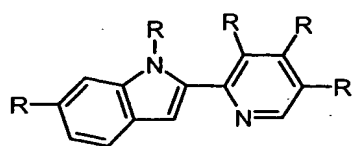
(IVa-1)



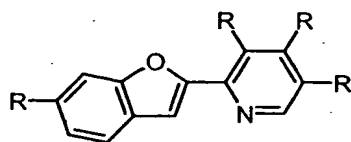
(IVb-1)



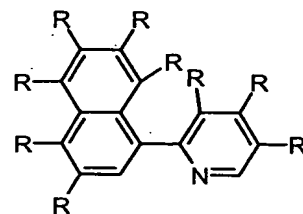
(IVc-1)



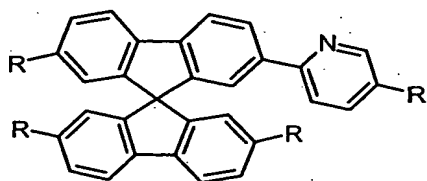
(IVd-1)



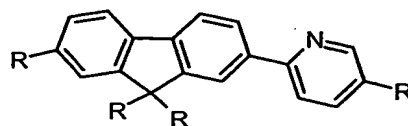
(IVe-1)



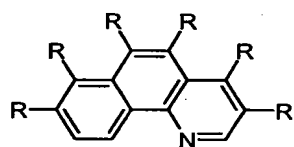
(IVf-1)



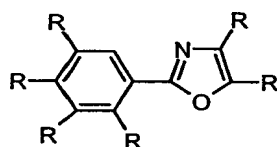
(IVg-1)



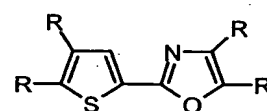
(IVh-1)



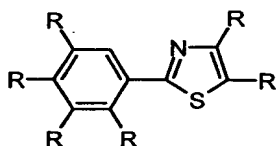
(IVi-1)



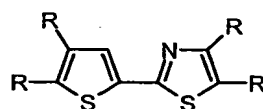
(IVj-1)



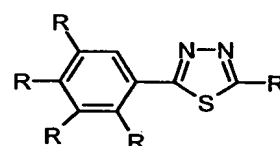
(IVk-1)



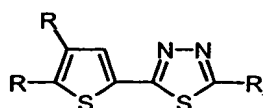
(IVl-1)



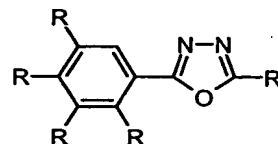
(IVm-1)



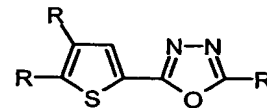
(IVn-1)



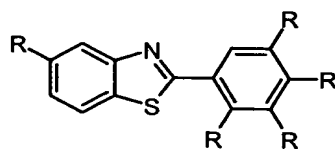
(IVo-1)



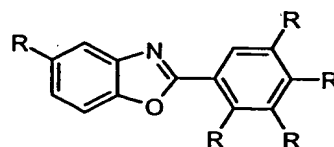
(IVp-1)



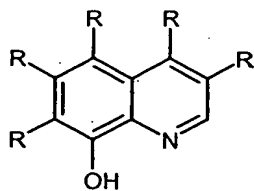
(IVq-1)



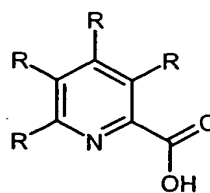
(IVr-1)



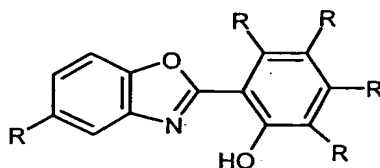
(IVs-1)



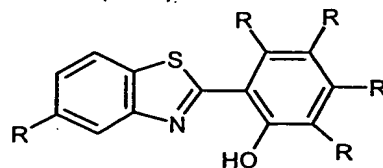
(IVt-1)



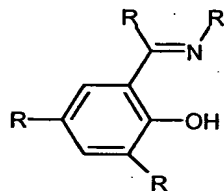
(IVu-1)



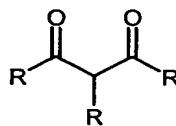
(IVv-1)



(IVw-1)



(IVx-1)



(IVy-1)

the ligands L^1 and L^2 complex the metal M in a chelate-like manner,

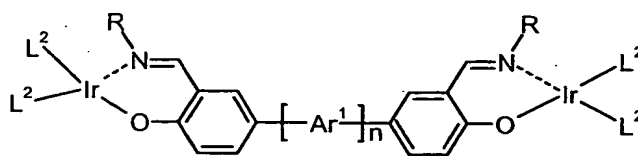
M represents iridium(III), platinum(II), osmium(II) or rhodium(III),

n represents an integer from 3 to 10 000,

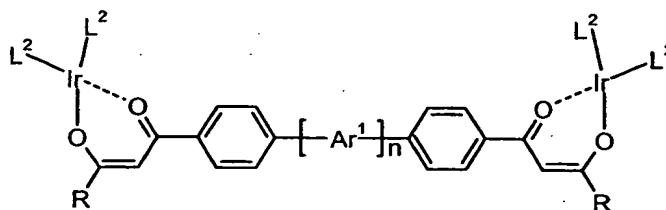
z is an integer from 1 to 3 and

R are identical or different radicals and, independently of one another, represent, H, F, CF_3 , a linear or branched C_1 - C_{22} -alkyl group, a linear or branched partly fluorinated or perfluorinated C_1 - C_{22} -alkyl group, a linear or branched C_1 - C_{22} -alkoxy group, an optionally C_1 - C_{30} -alkyl-substituted C_5 - C_{20} -aryl unit and/or an optionally C_1 - C_{30} -alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur.

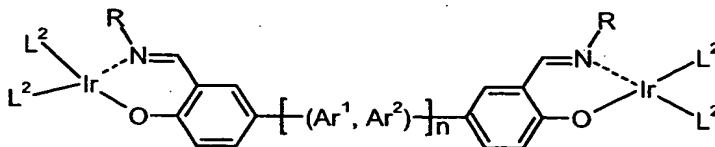
16. Luminescent polymer according to at least one of Claims 14 and 15, characterized in that it has a structure of the general formulae (Ia-1) to (Ib-2)



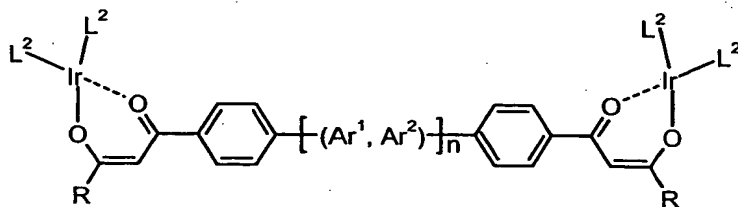
(Ia-1)



(Ia-2)



(Ib-1)



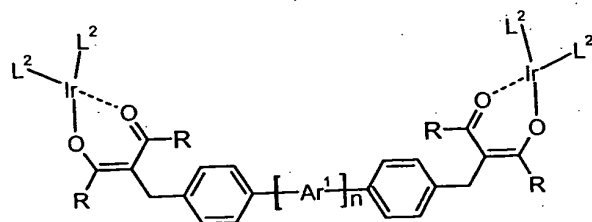
(Ib-2)

in which

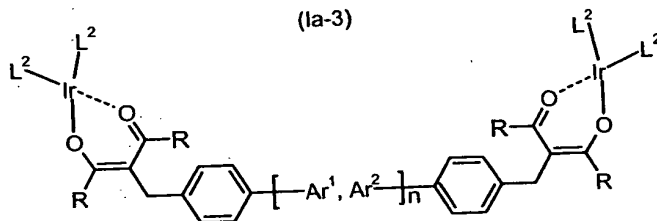
- 5 R represents a linear or branched C₁-C₂₂-alkyl group or a linear or branched partly fluorinated or perfluorinated C₁-C₂₂-alkyl group and

n, Ar¹, Ar² and L² have the meaning stated in Claim 15.

- 10 17. Luminescent polymer according to at least one of Claims 14 and 15, characterized in that it has a structure of the general formulae (Ia-3) or (Ib-3)



(Ia-3)



(Ib-3)

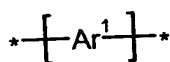
in which

- 5 R represents a linear or branched C₁-C₂₂-alkyl group or a linear or branched partly fluorinated or perfluorinated C₁-C₂₂-alkyl group and

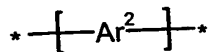
n, Ar¹, Ar² and L² have the meaning stated in Claim 15.

- 10 18. Luminescent polymer according to at least one of Claims 11 to 13, characterized in that the metal complex or complexes, which may be identical or different, is or are covalently bonded to the conjugated main chain.

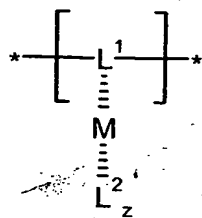
- 15 19. Luminescent polymer according to Claim 18, characterized in that it contains n repeating units of the general formulae (Ic-1) and (Id) or (Ic-1), (Ic-2) and (Id)



(Ic-1)



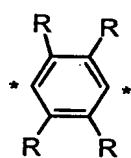
(Ic-2)



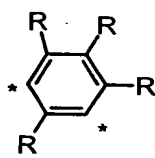
(Id)

in which

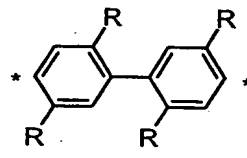
Ar¹ represents optionally substituted phenylene units (IIa) or (IIb), biphenylene units (IIc), fluorenylene units (IId), spirobifluorenylene units (IIe), dihydrophenanthrylene units (IIg) or tetrahydropyrenylene units (IIh)



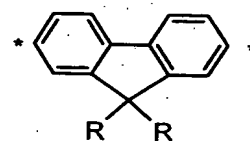
(IIa)



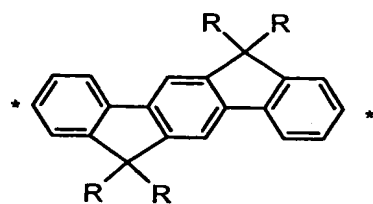
(IIb)



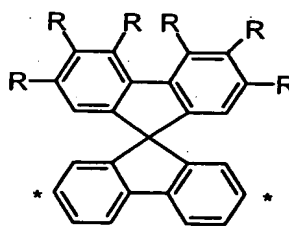
(IIc)



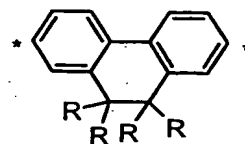
(IId)



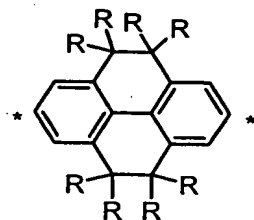
(IIe)



(IIg)

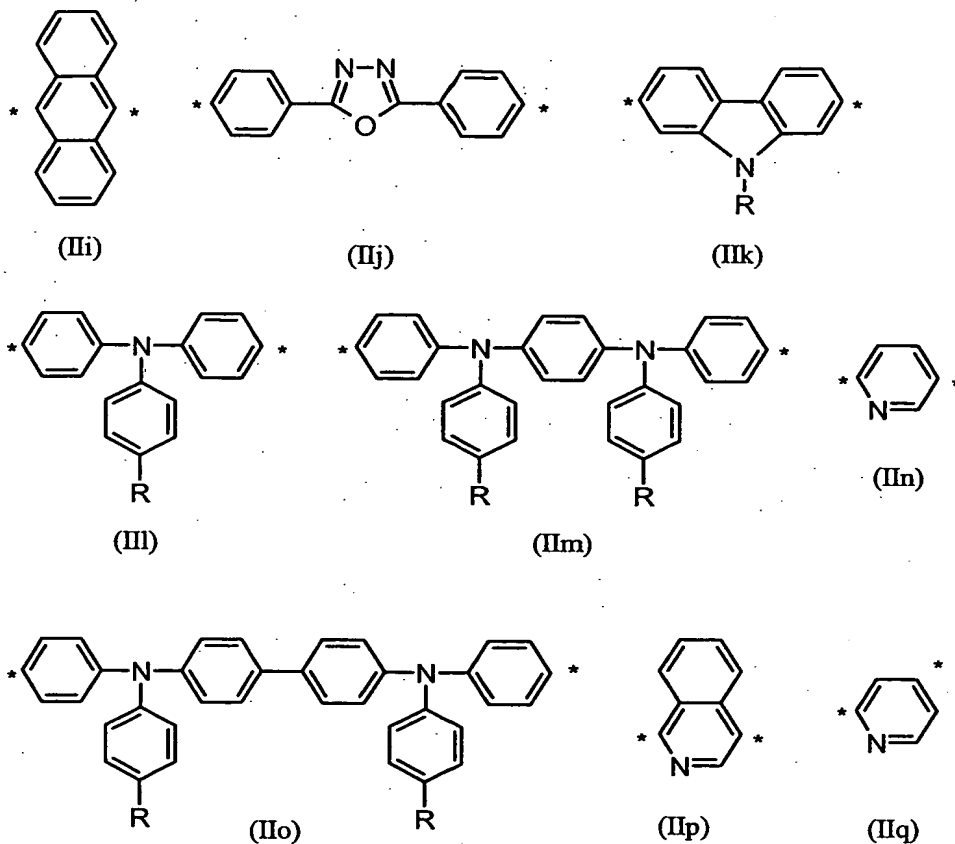


(IIh)



(IIh)

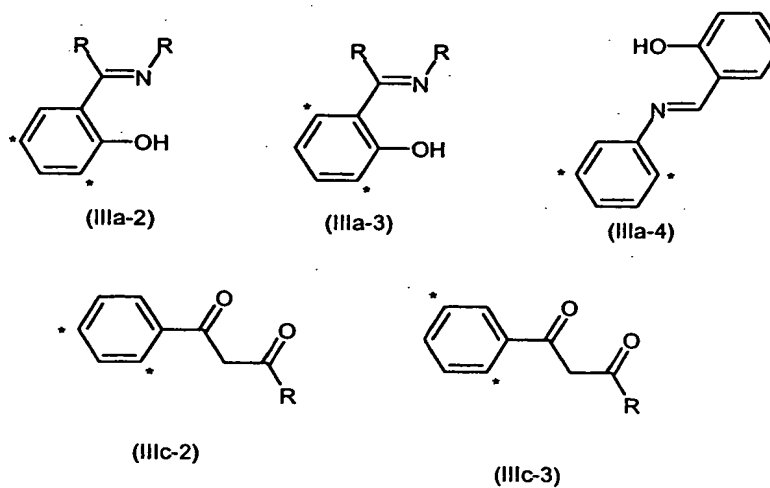
Ar^2 differs from Ar^1 and represents units selected from (IIa) to (IIq)

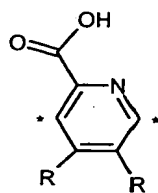


5

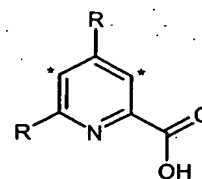
L^1 and L^2 in each case are identical or different and

L^1 is a ligand of the formula (IIIa-2) to (IIIi-1)

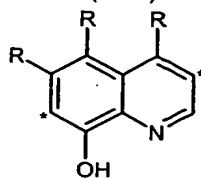




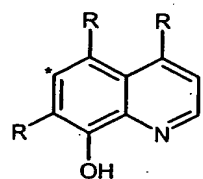
(III d-2)



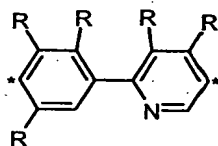
(III d-3)



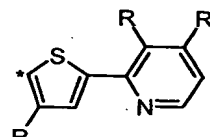
(III e-1)



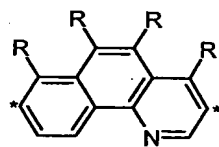
(III e-2)



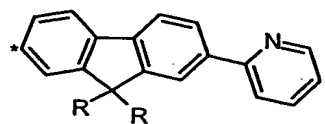
(III f-1)



(III g-1)

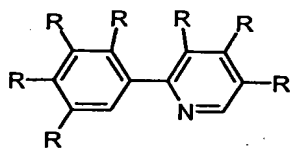


(III h-1)

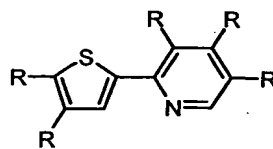


(III i-1)

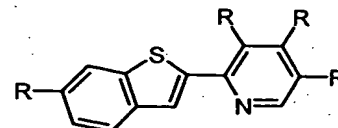
L^2 , independently of L^1 , is a ligand selected from units of the formulae (IVa-1) to (IVy-1)



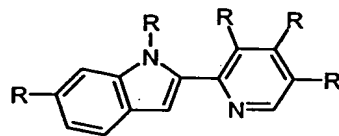
(IV a-1)



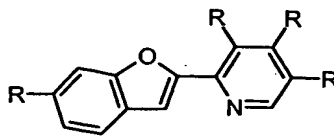
(IV b-1)



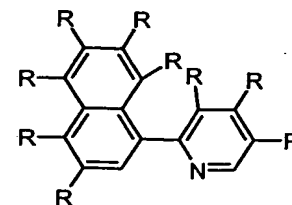
(IV c-1)



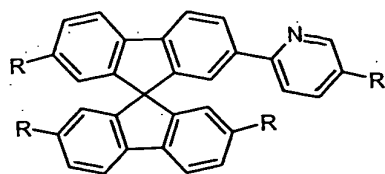
(IV d-1)



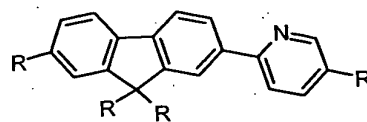
(IV e-1)



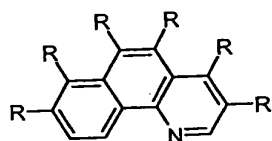
(IV f-1)



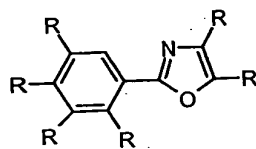
(IVg-1)



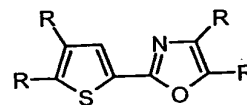
(IVh-1)



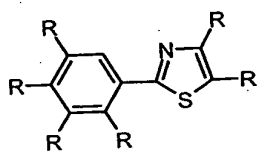
(IVi-1)



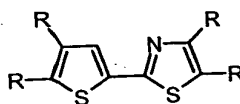
(IVj-1)



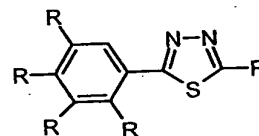
(IVk-1)



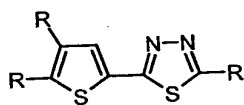
(IVl-1)



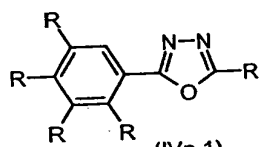
(IVm-1)



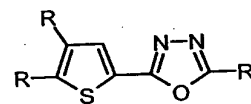
(IVn-1)



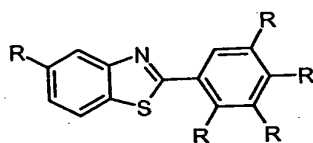
(IVo-1)



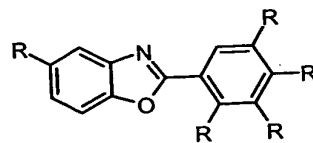
(IVp-1)



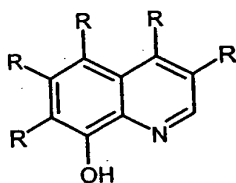
(IVq-1)



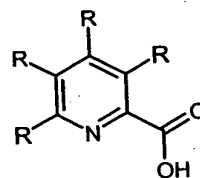
(IVr-1)



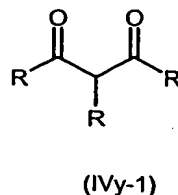
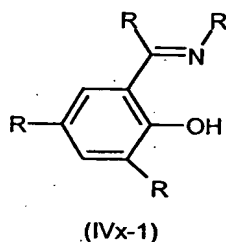
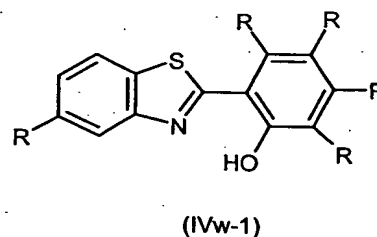
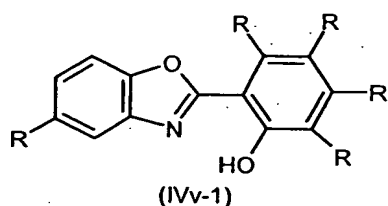
(IVs-1)



(IVt-1)



(IVu-1)



the ligands L^1 and L^2 complex the metal M in a chelate-like manner,

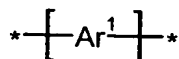
M represents iridium(III), platinum(II), osmium(II) or rhodium(III),

n represents an integer from 3 to 10 000,

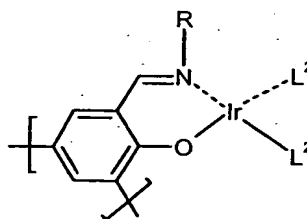
z represents an integer from 1 to 3 and

R are identical or different radicals and, independently of one another, represent, H, F, CF_3 , a linear or branched C_1 - C_{22} -alkyl group, a linear or branched partly fluorinated or perfluorinated C_1 - C_{22} -alkyl group, a linear or branched C_1 - C_{22} -alkoxy group, an optionally C_1 - C_{30} -alkyl-substituted C_5 - C_{20} -aryl unit and/or an optionally C_1 - C_{30} -alkyl-substituted heteroaryl unit having 5 to 9 ring C atoms and 1 to 3 ring hetero atoms from the group consisting of nitrogen, oxygen and sulphur.

20. Luminescent polymer according to Claim 19, characterized in that it contains n repeating units of the general formulae (Ic-1) and (Id-1)



(Ic-1)



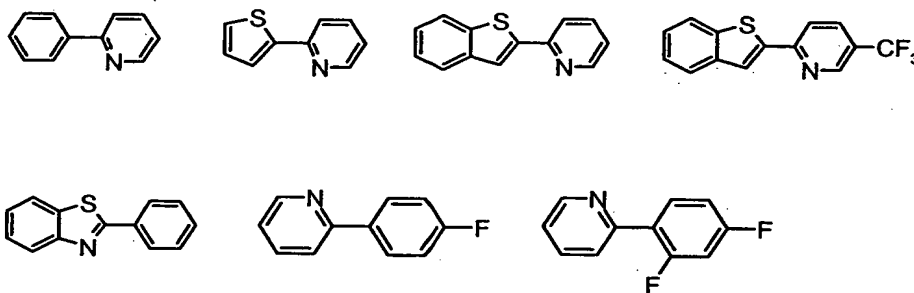
(Id-1)

in which

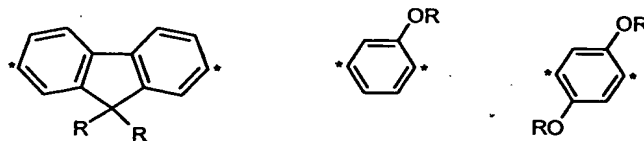
R represents a linear or branched C_1 - C_{22} -alkyl group or a linear or branched partly fluorinated or perfluorinated C_1 - C_{22} -alkyl group and

n, Ar^1 and L^2 have the meaning stated in Claim 18.

21. Luminescent polymer according to at least one of Claims 15 to 20, characterized in that L^2 represents ligands selected from units of the formulae



22. Luminescent polymer according to at least one of Claims 15 to 21, characterized in that Ar^1 and Ar^2 , independently of one another, represent units of the formulae



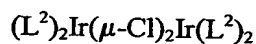
in which

R represents a linear or branched C_1 - C_{22} -alkyl group.

23. Luminescent polymer according to at least one of Claims 15 to 22, characterized in that n represents an integer from 10 to 5 000, preferably from 20 to 1 000, particularly preferably from 40 to 500.

5 24. Process for the preparation of phosphorescent or luminescent polymers according to at least one of Claims 1 to 23, characterized in that uncomplexed ligand polymers are complexed with iridium(III), platinum(II), osmium(II) or rhodium(III) precursor complexes.

10 25. Process for the preparation of phosphorescent or luminescent polymers according to Claim 24, characterized in that uncomplexed ligand polymers are complexed with iridium(III) precursor complexes of the general formula E



15

E

in which L^2 has the meaning stated in at least one of Claims 1 to 23.

20 26. Use of the phosphorescent or luminescent polymers according to at least one of Claims 1 to 23 or blends thereof as emitters in light-emitting components.

25 27. Electroluminescent arrangement, characterized in that it contains at least one phosphorescent or luminescent polymer according to at least one of Claims 1 to 23 or blends thereof.

28. Electroluminescent arrangement according to Claim 27, characterized in that it contains a hole-injecting layer.

30 29. Production of the electroluminescent elements in the electroluminescent arrangements according to Claim 27 or 28, characterized in that the phosphorescent or luminescent polymers according to at least one of Claims 1 to 23 or blends thereof are applied from solution.